WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device comprising the steps of:

adding a metal element to a first semiconductor film comprising amorphous silicon over a substrate;

crystallizing the first semiconductor film to form a first crystalline semiconductor film;

forming a barrier layer on the first crystalline semiconductor film;

forming a second semiconductor film on the barrier layer;

forming a third semiconductor film containing one conductive type impurity element on the second semiconductor film;

reducing a concentration of the metal element in the first crystalline semiconductor film by allowing the third semiconductor film to getter the metal element; and

removing the second semiconductor film and the third semiconductor film.

2. A method of manufacturing a semiconductor device according to claim 1, wherein the third semiconductor film is formed by forming a semiconductor film and by adding one conductive type impurity element to the semiconductor film.

3. A method of manufacturing a semiconductor device according to claim 1, wherein the third semiconductor film containing the one conductive type impurity element is formed by one selected from the group consisting of a plasma CVD method and a low pressure thermal CVD method.

4. A method of manufacturing a semiconductor device according to claim 1, wherein the third semiconductor film containing the one conductive type impurity element is formed by sputtering technique.

6. A method of manufacturing a semiconductor device according to claim 4, further comprising a step of adding at least one element selected from the group consisting of He, Ne, Ar, Kr, Xe, O, O_2, H, and H_2 to the third semiconductor film containing the one conductive type impurity element.

7. A method of manufacturing a semiconductor device according to claim 1, wherein the third semiconductor film has an amorphous structure or a crystalline structure.

8. A method of manufacturing a semiconductor device according to claim 1, wherein the metal element is at least one element selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

9. A method of manufacturing a semiconductor device according to claim 1, wherein the crystallizing step is carried out by a heat treatment.

10. A method of manufacturing a semiconductor device according to claim 1, wherein the crystallizing step is carried out by irradiating the first semiconductor film with a light.

11. A method of manufacturing a semiconductor device according to claim 1, wherein the crystallizing step is carried out by a heat treatment and by irradiating the first semiconductor film with a light after the heat treatment.

12. A method of manufacturing a semiconductor device according to claim 1, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film with a solution containing ozone.

13. A method of manufacturing a semiconductor device according to claim 1, wherein the barrier layer is formed by oxidizing the surface of the first

crystalline semiconductor film by an ultraviolet irradiation.

14. A method of manufacturing a semiconductor device according to claim 1, wherein the reducing step is carried out by a heat treatment.

15. A method of manufacturing a semiconductor device according to claim 1, wherein the reducing step is carried out by irradiating the first crystalline semiconductor film with a light.

16. A method of manufacturing a semiconductor device according to claim 1, wherein the reducing step is carried out by a heat treatment and by irradiating the first crystalline semiconductor film with a light after the heat treatment.

17. A method of manufacturing a semiconductor device according to claim 1, wherein the one conductive type impurity element is one selected from the group consisting of elements belonging to Group 15 or 13 in the periodic table.

18. A method of manufacturing a semiconductor device according to claim 15, wherein the light is emitted from one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high pressure sodium lamp, and a high pressure mercury lamp.

19. A method of manufacturing a semiconductor device according to claim 1, wherein the semiconductor device is an EL display device.

20. A method of manufacturing a semiconductor device according to claim 1, wherein the semiconductor device is at least one selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle-type display, a player using a recording medium, a digital camera, a projector, a mobile phone, and a portable book.

21. A method of manufacturing a semiconductor device comprising the steps of:

adding a metal element to a first semiconductor film comprising amorphous silicon over a substrate;

crystallizing the first semiconductor film to form a first crystalline semiconductor film;

forming a barrier layer on the first crystalline semiconductor film;

forming a second semiconductor film on the barrier layer;

adding one conductive type impurity element to only an upper layer of the second semiconductor film;

reducing a concentration of the metal element in the first crystalline semiconductor film by allowing the upper layer of the second semiconductor film to getter the metal element; and

removing the second semiconductor film.

22. A method of manufacturing a semiconductor device according to claim 21, further comprising a step of adding at least one element selected from the group consisting of He, Ne, Ar, Kr, Xe, O, O_2, H, and H_2 to the second semiconductor film.

23. A method of manufacturing a semiconductor device according to claim 21, wherein the second semiconductor film has an amorphous structure or a crystalline structure.

24. A method of manufacturing a semiconductor device according to claim 21, wherein the metal element is at least one element selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

25. A method of manufacturing a semiconductor device according to claim

21, wherein the crystallizing step is carried out by a heat treatment.

26. A method of manufacturing a semiconductor device according to claim 21, wherein the crystallizing step is carried out by irradiating the first semiconductor film with a light.

27. A method of manufacturing a semiconductor device according to claim 21, wherein the crystallizing step is carried out by a heat treatment and by irradiating the first semiconductor film with a light after the heat treatment.

28. A method of manufacturing a semiconductor device according to claim 21, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film with a solution containing ozone.

29. A method of manufacturing a semiconductor device according to claim 21, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film by an ultraviolet irradiation.

30. A method of manufacturing a semiconductor device according to claim 21, wherein the reducing step is carried out by a heat treatment.

31. A method of manufacturing a semiconductor device according to claim 21, wherein the reducing step is carried out by irradiating the first crystalline semiconductor film with a light.

32. A method of manufacturing a semiconductor device according to claim 21, wherein the reducing step is carried out by a heat treatment and by irradiating the first crystalline semiconductor film with a light after the heat treatment.

33. A method of manufacturing a semiconductor device according to claim

21, wherein the one conductive type impurity element is one selected from the group consisting of elements belonging to Group 15 or 13 in the periodic table.

34. A method of manufacturing a semiconductor device according to claim 31, wherein the light is emitted from one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high pressure sodium lamp, and a high pressure mercury lamp.

35. A method of manufacturing a semiconductor device according to claim 21, wherein the semiconductor device is an EL display device.

36. A method of manufacturing a semiconductor device according to claim 21, wherein the semiconductor device is at least one selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle-type display, a player using a recording medium, a digital camera, a projector, a mobile phone, and a portable book.

37. A method of manufacturing a semiconductor device comprising the steps of:

forming a first semiconductor film comprising amorphous silicon over a substrate;

adding a crystallization promoting material on the first semiconductor film;

crystallizing the first semiconductor film to form a first crystalline semiconductor film;

forming a barrier layer on the first crystalline semiconductor film;

forming a second semiconductor film on the barrier layer;

forming a third semiconductor film containing one conductive type impurity element on the second semiconductor film;

reducing a concentration of the crystallization promoting material in the first crystalline semiconductor film by using the third semiconductor film; and

removing the second and the third semiconductor films after the reducing step.

38. A method of manufacturing a semiconductor device according to claim 37, wherein the third semiconductor film is formed by forming a semiconductor film and by adding one conductive type impurity element to the semiconductor film.

39. A method of manufacturing a semiconductor device according to claim 37, wherein the third semiconductor film containing the one conductive type impurity element is formed by one selected from the group consisting of a plasma CVD method and a low pressure thermal CVD method.

40. A method of manufacturing a semiconductor device according to claim 37, wherein the third semiconductor film containing the one conductive type impurity element is formed by sputtering technique.

41. A method of manufacturing a semiconductor device according to claim 37, further comprising a step of adding at least one element selected from the group consisting of He, Ne, Ar, Kr, Xe, O, O_2, H, and H_2 to the third semiconductor film containing the one conductive type impurity element.

42. A method of manufacturing a semiconductor device according to claim 37, wherein the third semiconductor film has an amorphous structure or a crystalline structure.

43. A method of manufacturing a semiconductor device according to claim 37, wherein the crystallization promoting material is at least one element selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

44. A method of manufacturing a semiconductor device according to claim 37, wherein the crystallizing step is carried out by a heat treatment.

45. A method of manufacturing a semiconductor device according to claim 37, wherein the crystallizing step is carried out by irradiating the first semiconductor film with a light.

46. A method of manufacturing a semiconductor device according to claim 37, wherein the crystallizing step is carried out by a heat treatment and by irradiating the first semiconductor film with a light after the heat treatment.

47. A method of manufacturing a semiconductor device according to claim 37, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film with a solution containing ozone.

48. A method of manufacturing a semiconductor device according to claim 37, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film by an ultraviolet irradiation.

49. A method of manufacturing a semiconductor device according to claim 37, wherein the reducing step is carried out by a heat treatment.

50. A method of manufacturing a semiconductor device according to claim 37, wherein the reducing step is carried out by irradiating the first crystalline semiconductor film with a light.

51. A method of manufacturing a semiconductor device according to claim 37, wherein the reducing step is carried out by a heat treatment and by irradiating the first crystalline semiconductor film with a light after the heat treatment.

52. A method of manufacturing a semiconductor device according to claim 37, wherein the one conductive type impurity element is one selected from the group consisting of elements belonging to Group 15 or 13 in the periodic table.

53. A method of manufacturing a semiconductor device according to claim 50, wherein the light is emitted from one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high pressure sodium lamp, and a high pressure mercury lamp.

54. A method of manufacturing a semiconductor device according to claim 37, wherein the semiconductor device is an EL display device.

55. A method of manufacturing a semiconductor device according to claim 37, wherein the semiconductor device is at least one selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle-type display, a player using a recording medium, a digital camera, a projector, a mobile phone, and a portable book.

56. A method of manufacturing a semiconductor device comprising the steps of:

forming a first semiconductor film comprising amorphous silicon over a substrate;

adding a crystallization promoting material on the first semiconductor film;

crystallizing the first semiconductor film to form a first crystalline semiconductor film;

forming a barrier layer on the first crystalline semiconductor film;

forming a second semiconductor film on the barrier layer;

forming a third semiconductor film containing one conductive type impurity element on the second semiconductor film;

reducing a concentration of the crystallization promoting material in the

first crystalline semiconductor film by gettering the crystallization promoting material into the third semiconductor film; and

removing the second and the third semiconductor films after the reducing step.

57. A method of manufacturing a semiconductor device according to claim 56, wherein the third semiconductor film is formed by forming a semiconductor film and by adding one conductive type impurity element to the semiconductor film.

58. A method of manufacturing a semiconductor device according to claim 56, wherein the third semiconductor film containing the one conductive type impurity element is formed by one selected from the group consisting of a plasma CVD method and a low pressure thermal CVD method.

59. A method of manufacturing a semiconductor device according to claim 56, wherein the third semiconductor film containing the one conductive type impurity element is formed by sputtering technique.

60. A method of manufacturing a semiconductor device according to claim 56, further comprising a step of adding at least one element selected from the group consisting of He, Ne, Ar, Kr, Xe, O, O_2, H, and H_2 to the third semiconductor film containing the one conductive type impurity element.

61. A method of manufacturing a semiconductor device according to claim 56, wherein the third semiconductor film has an amorphous structure or a crystalline structure.

62. A method of manufacturing a semiconductor device according to claim 56, wherein the crystallization promoting material is at least one element selected

from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

63. A method of manufacturing a semiconductor device according to claim 56, wherein the crystallizing step is carried out by a heat treatment.

64. A method of manufacturing a semiconductor device according to claim 56, wherein the crystallizing step is carried out by irradiating the first semiconductor film with a light.

65. A method of manufacturing a semiconductor device according to claim 56, wherein the crystallizing step is carried out by a heat treatment and by irradiating the first semiconductor film with a light after the heat treatment.

66. A method of manufacturing a semiconductor device according to claim 56, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film with a solution containing ozone.

67. A method of manufacturing a semiconductor device according to claim 56, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film by an ultraviolet irradiation.

68. A method of manufacturing a semiconductor device according to claim 56, wherein the reducing step is carried out by a heat treatment.

69. A method of manufacturing a semiconductor device according to claim 56, wherein the reducing step is carried out by irradiating the first crystalline semiconductor film with a light.

70. A method of manufacturing a semiconductor device according to claim 56, wherein the reducing step is carried out by a heat treatment and by irradiating

the first crystalline semiconductor film with a light after the heat treatment.

71. A method of manufacturing a semiconductor device according to claim 56, wherein the one conductive type impurity element is one selected from the group consisting of elements belonging to Group 15 or 13 in the periodic table.

72. A method of manufacturing a semiconductor device according to claim 69, wherein the light is emitted from one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high pressure sodium lamp, and a high pressure mercury lamp.

73. A method of manufacturing a semiconductor device according to claim 69, wherein the semiconductor device is an EL display device.

74. A method of manufacturing a semiconductor device according to claim 69, wherein the semiconductor device is at least one selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle-type display, a player using a recording medium, a digital camera, a projector, a mobile phone, and a portable book.

75. A method of manufacturing a semiconductor device comprising the steps of:

forming a first semiconductor film comprising amorphous silicon over a substrate;

adding a crystallization promoting material on the first semiconductor film;

crystallizing the first semiconductor film to form a first crystalline semiconductor film;

forming a barrier layer on the first crystalline semiconductor film;

forming a second semiconductor film on the barrier layer;

adding one conductive type impurity element to only an upper layer of the

second semiconductor film;

reducing a concentration of the crystallization promoting material in the first crystalline semiconductor film by using the second semiconductor film; and

removing the second semiconductor film after the reducing step.

76. A method of manufacturing a semiconductor device according to claim 75, further comprising a step of adding at least one element selected from the group consisting of He, Ne, Ar, Kr, Xe, O, O_2, H, and H_2 to the second semiconductor film.

77. A method of manufacturing a semiconductor device according to claim 75, wherein the second semiconductor film has an amorphous structure or a crystalline structure.

78. A method of manufacturing a semiconductor device according to claim 75, wherein the crystallization promoting material is at least one element selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

79. A method of manufacturing a semiconductor device according to claim 75, wherein the crystallizing step is carried out by a heat treatment.

80. A method of manufacturing a semiconductor device according to claim 75, wherein the crystallizing step is carried out by irradiating the first semiconductor film with a light.

81. A method of manufacturing a semiconductor device according to claim 75, wherein the crystallizing step is carried out by a heat treatment and by irradiating the first semiconductor film with a light after the heat treatment.

82. A method of manufacturing a semiconductor device according to claim

75, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film with a solution containing ozone.

83. A method of manufacturing a semiconductor device according to claim 75, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film by an ultraviolet irradiation.

84. A method of manufacturing a semiconductor device according to claim 75, wherein the reducing step is carried out by a heat treatment.

85. A method of manufacturing a semiconductor device according to claim 75, wherein the reducing step is carried out by irradiating the first crystalline semiconductor film with a light.

86. A method of manufacturing a semiconductor device according to claim 75, wherein the reducing step is carried out by a heat treatment and by irradiating the first crystalline semiconductor film with a light after the heat treatment.

87. A method of manufacturing a semiconductor device according to claim 75, wherein the one conductive type impurity element is one selected from the group consisting of elements belonging to Group 15 or 13 in the periodic table.

88. A method of manufacturing a semiconductor device according to claim 85, wherein the light is emitted from one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high pressure sodium lamp, and a high pressure mercury lamp.

89. A method of manufacturing a semiconductor device according to claim 75, wherein the semiconductor device is an EL display device.

90. A method of manufacturing a semiconductor device according to claim 75, wherein the semiconductor device is at least one selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle-type display, a player using a recording medium, a digital camera, a projector, a mobile phone, and a portable book.

91. A method of manufacturing a semiconductor device comprising the steps of:

forming a first semiconductor film comprising amorphous silicon over a substrate;

adding a crystallization promoting material on the first semiconductor film;

crystallizing the first semiconductor film to form a first crystalline semiconductor film;

forming a barrier layer on the first crystalline semiconductor film;

forming a second semiconductor film on the barrier layer;

adding one conductive type impurity element to only an upper layer of the second semiconductor film;

reducing a concentration of the crystallization promoting material in the first crystalline semiconductor film by gettering the crystallization promoting material into the second semiconductor film; and

removing the second semiconductor film after the reducing step.

92. A method of manufacturing a semiconductor device according to claim 91, further comprising a step of adding at least one element selected from the group consisting of He, Ne, Ar, Kr, Xe, O, O_2, H, and H_2 to the second semiconductor film.

93. A method of manufacturing a semiconductor device according to claim 91, wherein the second semiconductor film has an amorphous structure or a crystalline structure.

94. A method of manufacturing a semiconductor device according to claim 91, wherein the crystallization promoting material is at least one element selected from the group consisting of Fe, Ni, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu, and Au.

95. A method of manufacturing a semiconductor device according to claim 91, wherein the crystallizing step is carried out by a heat treatment.

96. A method of manufacturing a semiconductor device according to claim 91, wherein the crystallizing step is carried out by irradiating the first semiconductor film with a light.

97. A method of manufacturing a semiconductor device according to claim 91, wherein the crystallizing step is carried out by a heat treatment and by irradiating the first semiconductor film with a light after the heat treatment.

98. A method of manufacturing a semiconductor device according to claim 91, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film with a solution containing ozone.

99. A method of manufacturing a semiconductor device according to claim 91, wherein the barrier layer is formed by oxidizing the surface of the first crystalline semiconductor film by an ultraviolet irradiation.

100. A method of manufacturing a semiconductor device according to claim 91, wherein the reducing step is carried out by a heat treatment.

101. A method of manufacturing a semiconductor device according to claim 91, wherein the reducing step is carried out by irradiating the first crystalline semiconductor film with a light.

102. A method of manufacturing a semiconductor device according to claim 91, wherein the reducing step is carried out by a heat treatment and by irradiating the first crystalline semiconductor film with a light after the heat treatment.

103. A method of manufacturing a semiconductor device according to claim 91, wherein the one conductive type impurity element is one selected from the group consisting of elements belonging to Group 15 or 13 in the periodic table.

104. A method of manufacturing a semiconductor device according to claim 101, wherein the light is emitted from one selected from the group consisting of a halogen lamp, a metal halide lamp, a xenon arc lamp, a carbon arc lamp, a high pressure sodium lamp, and a high pressure mercury lamp.

105. A method of manufacturing a semiconductor device according to claim 91, wherein the semiconductor device is an EL display device.

106. A method of manufacturing a semiconductor device according to claim 91, wherein the semiconductor device is at least one selected from the group consisting of a personal computer, a video camera, a mobile computer, a goggle-type display, a player using a recording medium, a digital camera, a projector, a mobile phone, and a portable book.